
ABSTRACT

Printing on a printing medium with ink and treatment liquid having a function of setting ink, by using an apparatus which includes an ink ejection port for ejecting ink, a treatment liquid ejection port for ejecting treatment liquid, a waste liquid accommodating substance for accommodating waste liquid, a first introducing means for introducing waste ink discharged by recovery operation from the ink ejection port into a first portion of the waste liquid accommodating substance, and a second introducing means for introducing, independently of waste ink, waste treatment liquid discharged by recovery operation from the treatment liquid ejection port into a second portion separated from the first portion of the waste liquid accommodating substance.

IN THE CLAIMS:

Please amend Claim 8 as shown in the attached Appendix and add new
Claim 13. The claims, as pending in the subject application, read as follows:

8. (Amended) An ink jet apparatus for printing on a printing medium with
ink and treatment liquid having a function of setting ink, said apparatus comprising:
an ink ejection port for ejecting ink;
a treatment liquid ejection port for ejecting treatment liquid;
a waste liquid accommodating substance for accommodating waste liquid;

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a first introducing means for introducing waste ink discharged by recovery operation from said ink ejection port into a first portion of said waste liquid accommodating substance; and

a second introducing means for introducing, independently of waste ink, waste treatment liquid discharged by recovery operation from said treatment liquid ejection port into a second portion separated from said first portion of said waste liquid accommodating substance.

9. (Not Amended From Previous Version) An ink jet apparatus as claimed in Claim 8, wherein said waste liquid accommodating substance is formed in a U-shaped configuration.

10. (Not Amended From Previous Version) An ink jet apparatus as claimed in Claim 8 or Claim 9, wherein said treatment liquid contains a cationic material composed of a low molecular weight ingredient and a high molecular weight ingredient, and said ink contains an anionic dye.

11. (Not Amended From Previous Version) An ink jet apparatus as claimed in Claim 8 or Claim 9, wherein said treatment liquid contains a cationic material composed of a low molecular weight ingredient and a high molecular weight ingredient, and said ink contains an anionic dye or at least an anionic compound and a pigment.

12. (Not Amended From Previous Version) An ink jet apparatus as claimed in any one of Claims 8 to 11, further comprising an ink jet head which includes, as an energy generating element, an electrothermal transducer for generating thermal energy so as to allow a phenomenon of film boiling to appear in ink.

13. (New) An ink jet apparatus for printing on a printing medium with a first liquid and a second liquid different from the first liquid, the first liquid and the second liquid reacting to each other, said apparatus comprising:

 a first ejection port for ejecting the first liquid;
 a second ejection port for ejecting the second liquid; and
 a waste liquid accommodating substance for accommodating waste liquid,
 wherein said waste liquid accommodating substance receives the first liquid discharged by recovery operation from said first ejection port at a first portion of said waste liquid accommodating substance and receives, independently of the first liquid, the second liquid discharged by recovery operation from said second ejection port at a second portion of said waste liquid accommodating substance separated from said first portion of said waste liquid accommodating substance.

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REMARKS

Claims 8 to 13 are pending in the application, with Claim 8 having been amended herein, and with Claim 13 having been newly added herein. Claims 8 and 13 are the independent claims. Reconsideration and further examination are respectfully requested.

In the Office Action, the Abstract was objected to for alleged improper language and format. Applicant respectfully submits that the replacement Abstract set forth herein renders moot this objection. Accordingly, reconsideration and withdrawal of this objection is respectfully requested.

The disclosure was objected to for allegedly not disclosing the continuation data. Applicant respectfully calls to the Examiner's attention the Supplemental Preliminary Amendment dated November 30, 2000, in which the continuation data was submitted for entry into the specification. Accordingly, reconsideration and withdrawal of the objection to the specification are respectfully requested. A copy of the Supplemental Preliminary Amendment is enclosed for the Examiner's convenience.

Claims 8 and 12/8 were rejected under 35 U.S.C. § 102 over U.S. Patent No. 4,965,596 (Nagoshi); and Claims 9 to 11 and 12/9 to 11 were rejected under § 103 over Nagoshi. Reconsideration and withdrawal of these rejections are respectfully requested.

The present invention is directed to an ink jet apparatus which uses two different liquids for forming an image, wherein the two different liquids react with each other, such as ink and a treatment liquid. The apparatus uses a waste liquid accommodating substance which receives waste liquid of the first type which is discharged during a recovery operation at a first portion of the waste liquid accommodating substance, and which receives waste liquid of the second type which is discharged during a recovery operation into a second portion of the waste liquid accommodating substance, wherein the second portion is separated from the first portion. In this manner, the present invention efficiently collects waste liquids of both types into a same waste liquid accommodating

substance, while still preventing intermixing of the two different types of waste liquids in the waste liquid accommodating substance.

Turning to specific claim language, amended independent Claim 8 is directed to an ink jet apparatus for printing on a printing medium with ink and treatment liquid having a function of setting ink. The apparatus includes an ink ejection port for ejecting ink, a treatment liquid ejection port for ejecting treatment liquid, a waste liquid accommodating substance for accommodating waste liquid, a first introducing means for introducing waste ink discharged by recovery operation from the ink ejection port into a first portion of the waste liquid accommodating substance, and a second introducing means for introducing, independently of waste ink, waste treatment liquid discharged by recovery operation from the treatment liquid ejection port into a second portion separated from the first portion of the waste liquid accommodating substance.

The applied art, namely Nagoshi, is not seen to disclose or suggest an ink jet apparatus having a treatment liquid ejection port for ejecting treatment liquid, a first introducing means for introducing waste ink discharged by the recovery operation from the ink ejection port into a first portion of the waste liquid accommodating substance, and a second introducing means for introducing, independently of the waste ink, waste treatment liquid discharged by recovery operation from the treatment liquid ejection port into a second portion separated from the first portion of the waste liquid accommodating substance.

Nagoshi is generally directed to an ink jet recording apparatus in which waste ink is distributed to plural ink cartridges having respective waste ink reservoirs in a mutually communicating state so that the waste ink is distributed in approximately equal

amounts in the waste ink reservoirs to prevent overflowing from any particular waste ink reservoir. (Nagoshi, abstract; Figure 1; and column 2, lines 36 to 48). It is alleged in the Office Action that Nagoshi discloses the use of treatment liquid and discloses a treatment liquid ejection port for ejecting treatment liquid. Applicant strongly disagrees with this assertion. In particular, Nagoshi is only seen to disclose an ink jet apparatus which utilizes four recording heads 20BK, 20Y, 20M and 20C which respectively correspond to the colored inks of black, yellow, magenta and cyan, respectively. (Nagoshi, column 4, lines 4 to 10). Accordingly, recording head 20C is clearly defined in Nagoshi as a cyan colored ink recording head, and is nowhere seen to be described as being capable of ejecting treatment liquid or being utilized as a treatment liquid ejection port.

In addition, although each of ink cartridges 125BK, 125Y, 125M and 125C contain respective ink reservoirs 125BK-2, 125Y-2, 125M-2 and 125C-2 having absorbent materials, each of the aforementioned waste ink reservoirs are only seen to be supplied with waste ink by a single path. (Nagoshi, Figure 1; and column 5, lines 6 to 32). In particular, each waste ink absorbent member in each respective ink cartridge has a single incoming path, D1 to D4, respectively, for introducing waste ink into the waste ink absorbent member. (Nagoshi, Figure 1; and column 5, lines 23 to 32). Accordingly, not only does Nagoshi fail to disclose or suggest the use of a treatment liquid ejection port for ejecting treatment liquid, but Nagoshi also fails to disclose or suggest a single waste liquid accommodating substance which has two separate introducing means, wherein a first introducing means introduces waste ink into a first portion of the waste liquid accommodating substance, and a second introducing means introduces, independently of

the waste ink, waste treatment liquid into a second portion of the waste liquid accommodating substance, the second portion being separated from the first portion.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."

MPEP § 2131, citing Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987).

In summary, Nagoshi is nowhere seen to disclose or suggest the use of a treatment liquid or a treatment liquid ejection port, much less a single waste liquid accommodating substance which has first and second introducing means for separately introducing waste ink and waste treatment liquid so as to avoid intermixing of the waste ink and the waste treatment liquid in the waste liquid accommodating substance.

Accordingly, Nagoshi is not seen to disclose or suggest the combination of amended independent Claim 8.

The remaining art of record has been reviewed and is not seen to remedy the foregoing deficiencies of Nagoshi. Accordingly, amended independent Claim 8 is believed to be in condition for allowance, and such action is respectfully requested.

Newly-added independent Claim 13 is directed to an ink jet apparatus for printing on a printing medium with a first liquid and a second liquid different from the first liquid, the first liquid and the second liquid reacting to each other. The apparatus includes a first ejection port for ejecting the first liquid, a second ejection port for ejecting the second liquid, and a waste liquid accommodating substance for accommodating waste liquid. The waste liquid accommodating substance receives the first liquid discharged by recovery operation from the first ejection port at a first portion of the waste liquid

accommodating substance and receives, independently of the first liquid, the second liquid discharged by recovery operation from the second ejection port at a second portion of the waste liquid accommodating substance separated from the first portion of the waste liquid accommodating substance.

Nagoshi is not seen to disclose or suggest the foregoing features of independent Claim 13. As discussed above, Nagoshi is not seen to disclose or suggest the use of first and second liquids for recording, wherein the first liquid and the second liquid react to each other. In addition, also as discussed above, Nagoshi is not seen to utilize a single waste liquid accommodating substance which receives a first liquid at a first portion of the waste liquid accommodating substance, and which receives, independently of the first liquid, the second liquid at a second portion of the waste liquid accommodating substance, wherein the first portion is separated from the second portion.

Accordingly, for the foregoing reasons and those discussed above with respect to amended independent Claim 8, newly-added independent Claim 13 is also believed to be in condition for allowance.

The other pending claims in this application are each dependent from the independent claims discussed above and are therefore believed patentable for the same reasons. Because each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, the entire application is believed to be in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

Applicant's undersigned attorney may be reached in our Costa Mesa, CA office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,


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